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February 9, 2016

TO: Each Supervisor

FROM: Cynthia A. Harding, M.P.H.

SUBJECT: **WEST NILE VIRUS IN LOS ANGELES COUNTY – LESSONS LEARNED FROM THE 2015 SEASON**

On October 27, 2015, the Department of Public Health (DPH) made a presentation to your Board on West Nile Virus (WNV) in Los Angeles County (LAC). During the presentation, the importance of working with partners on a more targeted strategy to increase the effectiveness of WNV prevention activities was emphasized. Now that the 2015 WNV season has concluded, the coming months represent an important opportunity to review progress and consider additional strategies to improve prevention in 2016. This memorandum is to provide you with information on the lessons learned from the 2015 West Nile Virus season, and their application to community education and prevention activities going forward.

## **Background**

WNV is the most common mosquito-borne illness in the United States. Disease may range from a self-limited febrile illness to severe neurological disease such as meningitis, encephalitis, and paralysis. Disease may sometimes result in death. Many people also may be infected but manifest no symptoms. People at greatest risk for severe disease from this infection include the elderly and those with underlying diseases or who take medications that reduce their ability to mount an immune response to infection.

The first cases of WNV infection in the U.S. occurred in 1999 and the first case in LAC occurred in 2003. Whereas disease outbreaks initially had a 4-year periodicity, a significant number of cases in LAC have occurred each year since 2011 suggesting that outbreaks now are an annual occurrence (see [www.publichealth.lacounty.gov/acd/VectorWestNile.htm](http://www.publichealth.lacounty.gov/acd/VectorWestNile.htm) for more information on levels of local transmission). The 2015 WNV season was the most severe season on record for LAC: 297 cases were reported to DPH and 19 deaths occurred. This was more cases and over twice as many deaths as occurred in 2014.

WNV is transmitted by the bite of an infected *Culex* mosquito and several species of birds serve as a reservoir for the virus. *Culex* mosquitos are found throughout LAC but WNV cases occur more frequently in some areas that have a higher density of infected mosquitos. The WNV season generally extends from May until November, although with record temperatures in October 2015, cases continued to occur longer than in previous years. The five LAC Mosquito and Vector Control Agencies lead mosquito control and abatement activities and educate the public on reducing mosquito breeding around homes and neighborhoods.



## Prevention Strategies

WNV prevention in LAC is a collaborative process between DPH and the five Mosquito and Vector Control Districts in LAC. Strategies include emphasis on: 1) case detection and reporting; 2) general and targeted risk reduction through protection from mosquito bites, particularly among people at increased risk for severe disease and those living in areas with prior cases or evidence of infected mosquitos; 3) detection and abatement of WNV infected mosquitos and larvae; and 4) reduction of mosquito breeding generally.

Public education emphasizes reducing standing water around houses and recreational areas where mosquitos can breed, and utilizing personal protection, including wearing long sleeves and pants and using insect repellent, when outside at dawn and dusk when bites are most likely to occur. DPH educates local healthcare providers to improve diagnosis and reporting of WNV cases and urges them to inform and encourage their high-risk patients to enact protective measures. Targeted outreach and abatement activities are guided by the location of human cases and evidence of the virus in mosquitos and birds. While prevention messaging emphasizes that persons in all areas are at risk, more targeted prevention activities are implemented when cases clustered in space and time are detected.

## Priorities and Lessons Learned

1. **Strong collaboration between DPH and the Mosquito and Vector Control Agencies:** In 2015, coordination was further enhanced with DPH providing data to vector control on locations of human WNV cases to better target abatement efforts. An example of the value of this approach is provided in the case study highlighted below.

### Case study: WNV cluster in West Los Angeles County

In late-October and early-November, 4 confirmed WNV cases were reported to DPH among residents in Marina del Rey, Venice and Santa Monica – the first cases from this area in 2015. Three patients suffered meningitis, one had paralysis, and two persons died. Patient residences all were in the area around the marina. One concern was that fresh water from recent rains may have pooled on boat covers or in the bottom of boats providing sites where mosquitos can breed. As a result, DPH and vector control posted notices at 21 marinas, 29 senior facilities, and over 5,000 homes warning people about the WNV risk, informing them to take precautions, and emphasizing the importance of eliminating mosquito breeding sites. Further investigation by the Los Angeles County West Vector and Vector-Borne Disease Control District found that a renovation project at Oxford Basin by the Los Angeles County Departments of Beaches and Harbors and Public Works had closed off the ocean water from the marina to the basin and blocked the storm drain inlets. This resulted in pooling of fresh water in the storm drains, creating an extensive mosquito breeding problem throughout miles of storm drains. The Department of Public Works installed new drainage and the vector control district treated the storm drains to remediate the problem. Surveillance detected no additional cases following these prevention and response measures.

2. **Geographically targeted prevention messages:** Analysis of 2014 and early-2015 WNV case data showed that about a third of cases occurred within one month of a previous case in the same city. These data suggest that communicating the cities where recent cases have occurred may help focus prevention messages to areas at higher risk. Thus, as of October 22, 2015, DPH began to list cities with recent cases in the West Nile Virus Update (see Attachment 1), which is posted regularly on the DPH website during the WNV season. This allows local media to reinforce prevention messages, extending reach and communicating a sense of immediacy. Moreover, as many people may find it difficult to take measures to prevent mosquito bites consistently from May through November, knowing that a case occurred nearby could encourage them to take more precautions at least for a period during which they may be at increased risk.
3. **Outreach to high-risk populations and working with community partners:** When the first large WNV outbreak occurred in LAC in 2004, there was substantial interest in the community and DPH's Community Health Services Division frequently made presentations to community groups in response to their requests. As WNV has moved from a new disease to an annual threat, interest has waned and requests for information are very uncommon. With a more targeted approach to communications and prevention, DPH will work more proactively to reach out to groups at higher risk for severe infections in the geographic areas where cases occur (see Attachment 2).
4. **Consideration of WNV together with other mosquito-borne disease threats:** Outbreaks of Zika virus infections in Latin America and the Caribbean have focused attention on mosquito-borne disease threats. While Zika, dengue, and Chikungunya all are transmitted by a different type of mosquito (*Aedes*) than transmits WNV (*Culex*), these infections all emphasize the importance of vector control to protect Los Angeles County. In April, DPH and the five LAC mosquito and vector control agencies will meet for a full day to plan strategies for the 2016 mosquito and WNV season. At that time, plans will be made to most effectively communicate about prevention, enlist the public to take action to reduce locations where mosquitos may breed around their homes, and share information to most effectively target abatement and outreach.

If you have any questions or need additional information, please let me know.

CAH:lm

Attachments

c: Chief Executive Officer  
County Counsel  
Acting Executive Officer, Board of Supervisors





# West Nile Virus: 2015

## Los Angeles County Epidemiology Report #16

### December 17, 2015

This week a total of 19 new WNV infections were documented by the Department of Public Health (DPH). Symptom onsets of these cases ranged from August 23<sup>rd</sup> to November 20, 2015. To date, 265 infections (240 clinical cases and 25 asymptomatic infections), including 18 fatalities (Table 1) have been reported in LAC. To date, 681 clinical human cases have been reported in 31 California counties. Nationally, 1,966 clinical cases have been reported in 42 states, with the most documented in California. For additional information about WNV information in California and the U.S., see <http://westnile.ca.gov/> and <http://www.cdc.gov/ncidod/dvbid/westnile/> for details.

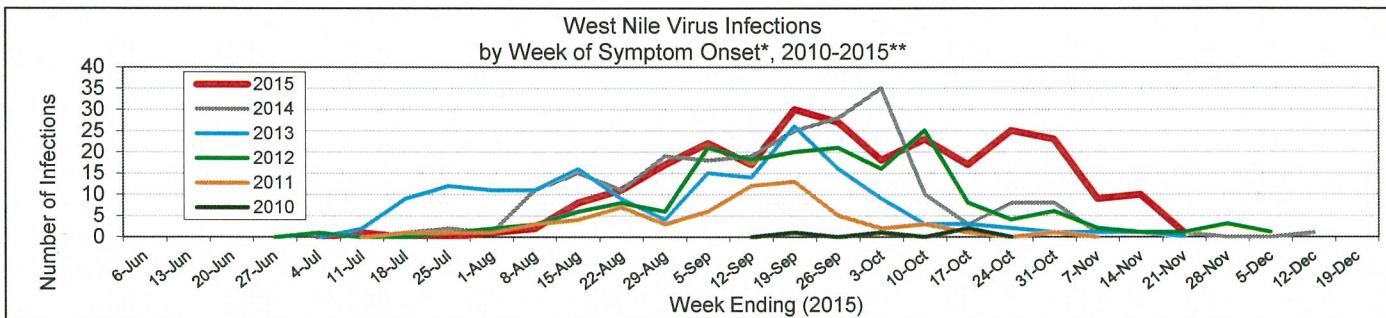
**Table 1. Characteristics of West Nile Virus Infections: Los Angeles County, 2015**

Number of Infections <sup>1</sup>		Asymptomatic Donor <sup>2</sup>	Clinical Presentation			Hospitalized	Deaths	Demographics	
			WNV Fever	Neuroinvasive Disease	Neuroinvasive Diagnosis			Gender M/F	Median Age (Range)
This Week	19	0	2	17	9 = Encephalitis 8 = Meningitis 0 = AFP <sup>3</sup>	17	0	14/5	53.0 (25-85)
Year Total	265	25	33	207	99 = Encephalitis 99 = Meningitis 8 = AFP <sup>3</sup> 1 = Other	228	18	177/88	62.0 (12-98)

<sup>1</sup>Count confirmed by LAC DPH as of Thursday, 12/17/15, 5pm. Excludes reports from Long Beach and Pasadena. Totals are provisional and subject to change.

<sup>2</sup>Includes non-donor asymptomatic infections.

<sup>3</sup>Acute Flaccid Paralysis.



\*Asymptomatic blood and organ donors listed by date of donation.

\*\*Due to reporting delays recent weeks may not be complete.

**Table 2.**

### WNV Infections by City of Residence LAC, Dec 11- Dec 17, 2015<sup>1</sup>

City	This Week <sup>1</sup>
Altadena	1
Encino	1
Los Angeles	9
Lynwood	1
North Hollywood	1
San Pedro	1
Santa Monica	2
Toluca Lake	1
Van Nuys	1
Whittier	1
<b>TOTAL</b>	<b>19</b>

<sup>1</sup>WNV infections confirmed by LAC DPH as of 12/17/15, 5pm. Excludes Long Beach and Pasadena. Totals are provisional and subject to change.

## What can you do to prevent WNV?

*For residents of cities with new WNV infections,  
Increase your efforts to prevent WNV!*

- If outdoors from dusk to dawn, use Environmental Protection Agency (EPA) approved insect repellents and cover up: wear long sleeve shirts and pants.
- To help keep mosquitoes out of your home, make sure your door and window screens are in good condition.
- Dump and drain water from potted plants, pet water bowls, and bird baths at least every 3 days to prevent mosquito breeding.





**CYNTHIA A. HARDING, M.P.H.**  
Interim Director

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### **Acute Communicable Disease Control**

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November 9, 2015

TO: Directors  
Residential Facilities for the Elderly

FROM: Laurene Mascola, M.D., M.P.H., F.A.A.P. *RL for LM*  
Chief, Acute Communicable Disease Control Program

RE: **PREVENTING WEST NILE VIRUS INFECTIONS AMONG THE ELDERLY**

Dear Director:

The Los Angeles County (LAC) Department of Public Health (DPH) monitors diseases occurring among the residents across our county. Recently, cases of West Nile virus (WNV) infection have been identified in your area of Santa Monica, Venice and Marina del Rey. West Nile virus is a disease caused by the bites of infected mosquitoes. It spreads during warm weather months when mosquitoes are most active. While everyone is at risk for WNV infection, people who are most vulnerable to serious illness even death from this disease include the elderly and people with weak immune systems.

Last year LAC DPH documented the second highest number of WNV infections since the disease first appeared in 2003: 218 infections including 7 deaths. This year the number of cases is less but there have been more deaths and cases still are being reported. We urge you to help reduce infections by informing your residents of this disease and encouraging protective actions such as wearing mosquito repellants and covering up (wearing long sleeves and pants), especially when outdoors at times when mosquitoes are more likely to bite, during early evening and early morning hours (dusk and dawn).

Spreading the message can help keep your residents safe. We have included some educational materials to help explain this disease and promote protective actions. Consider also making insect repellent available near exits and remind people to use it when they go out. Getting out and getting exercise are important so help people do it as safely as possible.



Directors, Residential Facilities for the Elderly  
November 9, 2015  
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In addition, LAC DPH offers free presentations to community groups through our Speakers' Bureau ([www.publichealth.lacounty.gov/hea/speakers.htm](http://www.publichealth.lacounty.gov/hea/speakers.htm)). Requests for presentations can be made by calling 213-351-7334 or by email to: [speakersbureau@ph.lacounty.gov](mailto:speakersbureau@ph.lacounty.gov). Additional information about WNV is available at: [www.publichealth.lacounty.gov/acd/VectorWestNile.htm](http://www.publichealth.lacounty.gov/acd/VectorWestNile.htm).

We thank you for helping us to prevent disease and protect the health of our communities.

LM:SR:sa

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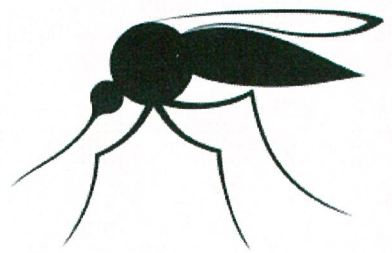
Attachments:

- 1) WNV FAQ (English)
- 2) WNV FAQ (Spanish)
- 3) WNV Target Outreach Elderly (English)
- 4) WNV Target Outreach Elderly (Spanish)

c: Rachel Civen, M.D., M.P.H.  
Condessa Curley, M.D., M.P.H.  
Jan B. King, M.D., M.P.H.  
Benjamin Schwartz, M.D., M.P.H.



# West Nile virus was found in your area



West Nile virus is a disease caused by the bites of infected mosquitoes. This disease spreads during warm weather when mosquitoes are most active. Everyone is at risk for West Nile virus infection. Those most at risk for serious illness, including death, are the elderly and people with weak immune systems.

**To prevent West Nile virus, avoid mosquito bites.**



Use insect repellants and cover up by wearing long sleeves and pants or other protective clothing.



Mosquitoes are most active during early evening and early morning hours (dusk and dawn).

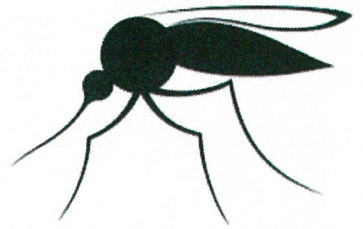


Keep mosquitoes out of your home. Make sure your door and window screens are in good condition.

**Protect yourself, your family,  
and your community from West Nile virus.**



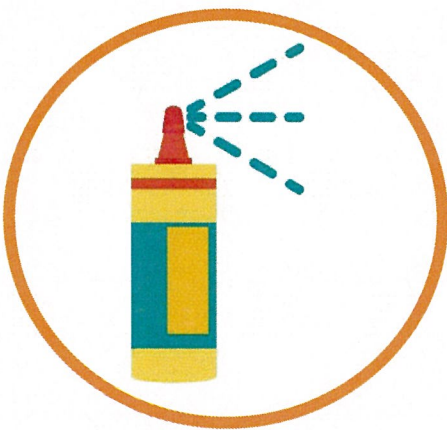
# Virus del Nilo Occidental fue encontrado en su área



Virus del Nilo Occidental es una enfermedad causada por la picadura de mosquitos infectados. Esta enfermedad se propaga durante clima cálido cuando los mosquitos están más activos.

Todas las personas están en riesgo de infección por el virus del Nilo Occidental. Aquellos con mayor riesgo de enfermedad grave, incluyendo la muerte, son los ancianos y las personas con sistemas inmunológicos débiles.

**Para prevenir el virus del Nilo Occidental, evite las picaduras de mosquitos.**



Use repelentes de insectos y cúbrase vistiendo mangas largas y pantalones u otra ropa protectora.



Los mosquitos son más activos durante la noche y madrugada (atardecer y amanecer).



Mantenga a los mosquitos fuera de su hogar. Asegúrese de que los mosquiteros de las puertas y ventanas estén en buenas condiciones.

**Protéjase a usted, su familia  
y su comunidad del virus del Nilo Occidental.**



# West Nile Virus (WNV)

## 1. What is West Nile Virus (WNV)?

West Nile virus (WNV) is a disease caused by the bites of infected mosquitoes. It spreads during warm weather months when mosquitoes are most active. Everyone is at risk of WNV infection, but people at most risk of serious illness are the elderly and those with a weak immune systems. WNV can also infect animals like birds and horses.

## 2. How does WNV spread?

This virus spreads when someone gets bitten by an infected mosquito. While most mosquitoes are not infected with the virus, it is best to stay safe and avoid mosquito bites. WNV doesn't spread through casual contact, like touching or kissing a person with the virus.

## 3. What are the symptoms of WNV?

Most people who get WNV don't have any symptoms. Some will have mild symptoms similar to the flu. A few will have severe symptoms, like high fever, stiff neck, muscle weakness, and sometimes rash. People get symptoms 3 to 14 days after being infected. If your symptoms are severe, call your doctor right away.

## 4. How is WNV treated?

There are no medicines to treat WNV infection or shots to prevent it. Over-the-counter pain medicines can be used to lower fever and other symptoms. People with severe symptoms may need to be hospitalized.

## 5. What can you do to prevent WNV?

- Avoid getting mosquito bites. Mosquitoes are most active during evening to early morning hours (dusk to dawn).
- If you are outdoors during those times, use Environmental Protection Agency (EPA) approved insect repellents and cover up: wear long sleeve shirts, and pants and other protective clothing.
- Keep mosquitoes out of your home. Make sure your door and window screens are in good condition.
- Get rid of places where mosquitoes lay their eggs. Every 2-3 days, dump and drain water from potted plants, pet water bowls, bird baths, and other places where water collects.
- Help Public Health track WNV by reporting dead birds, which can be a sign of WNV in an area:

California Department of Public Health  
1-877-WNV-BIRD or 1-877-968-2473  
<http://www.westnile.ca.gov/>

- To report a potential mosquito breeding situation, contact:  
Los Angeles County Vector Control  
(310) 915-7370 or <http://www.lawestvector.org>



### Key Points:

- WNV is caused by bites from infected mosquitoes. It doesn't spread through casual contact.
- While most people who are infected with WNV do not have symptoms, it is best to avoid mosquito bites, especially if you are older or have a weakened immune system.

### For more information:

Los Angeles County  
Veterinary Public Health  
<http://publichealth.lacounty.gov/acd/VectorWestNile.htm>

California Department of  
Public Health  
<http://www.westnile.ca.gov>

Centers for Disease Control  
and Prevention  
<http://www.cdc.gov/westnile/index.html>



# Virus del Nilo Occidental (VNO)

## 1. ¿Qué es el virus del Nilo Occidental (VNO)?

El virus del Nilo Occidental (VNO) es una enfermedad causada por las picaduras de mosquitos infectados. Se transmite durante los meses de clima cálido, cuando los mosquitos son más activos. Todas las personas corren el riesgo de contraer la infección del VNO, pero las personas que corren más riesgo de enfermarse seriamente son los ancianos o aquellas con un sistema inmunológico débil. El VNO también puede infectar a los animales como aves y caballos.

## 2. ¿Cómo se propaga el VNO?

El virus se transmite cuando un mosquito infectado pica a una persona. Aunque la mayoría de los mosquitos no está infectada con el virus, lo mejor es mantenerse seguro y evitar las picaduras de mosquitos. El VNO no se contagia a través del contacto casual, como tocar o besar a una persona que tenga el virus.

## 3. ¿Cuáles son los síntomas del VNO?

La mayoría de las personas que contraen el VNO no presenta ningún síntoma. Algunos tendrán síntomas leves como los de la gripe. Algunos tendrán síntomas graves, como fiebre alta, rigidez en el cuello, debilidad muscular y, en ocasiones, salpullido. Las personas presentan síntomas de 3 a 14 días después de ser infectados. Si sus síntomas son graves, llame al médico de inmediato.

## 4. ¿Cómo se trata el VNO?

No existen medicamentos para tratar la infección del VNO ni vacunas para prevenirla. Se pueden usar analgésicos de venta libre para disminuir la fiebre y otros síntomas. Es posible que las personas con síntomas graves necesiten hospitalización.

## 5. ¿Qué puede hacer usted para prevenir el VNO?

- Evite el riesgo de picaduras de mosquitos. Los mosquitos son más activos durante la noche y hasta las primeras horas de la mañana (desde el atardecer hasta el amanecer).
- Si usted está al aire libre durante esos horarios, use repelentes para insectos aprobados por la Agencia de Protección Ambiental (Environmental Protection Agency, EPA) y cúbrase: use camisas de mangas largas, pantalones y otra ropa de protección.
- Mantenga a los mosquitos fuera de su casa. Asegúrese de que los mosquiteros en las puertas y ventanas estén en buenas condiciones.
- Elimine los lugares donde los mosquitos ponen sus huevos. Cada 2 o 3 días, vacíe y drene el agua de las macetas y otros lugares donde se acumule el agua. También cambie el agua de los tazones de las mascotas y de las aves.
- Para ayudar a Salud Pública a llevar un registro del VNO, informe sobre la aparición de pájaros muertos, que pueden ser un signo del VNO en un área:

Departamento de Salud Pública del Estado de California  
1-877-WNV-BIRD o 1-877-968-2473  
<http://www.westnile.ca.gov/>

- Para informar de una situación posible de reproducción de mosquitos, póngase en contacto con:

Control de Vector del Condado de Los Ángeles  
(310) 915-7370 o <http://www.lawestvector.org>



### Puntos importantes:

- El VNO es causado por picaduras de mosquitos infectados. No se transmite por contacto casual.
- Aunque la mayoría de las personas infectadas con el VNO no tiene síntomas, es mejor evitar las picaduras de mosquitos, especialmente si es una persona mayor o tiene un sistema inmunológico débil.

### Para más información:

#### Salud Pública Veterinaria del Condado de Los Ángeles

<http://publichealth.lacounty.gov/acd/VectorWestNile.htm>

#### Departamento de Salud Pública del Estado de California

<http://www.westnile.ca.gov>

#### Centros para el Control y la Prevención de Enfermedades

<http://www.cdc.gov/westnile/esp/preguntas>